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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,498	01/13/2005	Hermann Bach	23126	1442
<div>535 7590 11/14/2007</div> <div>K.F. ROSS P.C.</div> <div>5683 RIVERDALE AVENUE</div> <div>SUITE 203 BOX 900</div> <div>BRONX, NY 10471-0900</div>				
<div>EXAMINER</div> <div>BULLOCK, IN SUK C</div>				
<div>ART UNIT PAPER NUMBER</div> <div>1797</div>				
<div>MAIL DATE DELIVERY MODE</div> <div>11/14/2007 PAPER</div>				

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/522,498	Applicant(s) BACH ET AL.	
	Examiner In Suk Bullock	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 7 recites "pentasil-type" which renders the scope of claims 1-4 indefinite because it is not clear what is intended by "type".

Also, recitation of phrases "containing essentially" and "essentially comprised" throughout claim 1 renders claims 1-4 indefinite because the scope of the transitional phrases are uncertain. For the purpose of the examination of this present application, the cited phrases will be interpreted as "comprising".

Claim 4 recitation of "the water that accumulates in the compression step" is indefinite because it is not clear whether the water is a part of the liquid phase containing C₄+ olefins or whether there is a third stream comprising water from the compression step.

Claim Objections

Claim 1 is objected to because of the following informalities: in claim 1 there is an inconsistent utilization of a transitional phase with regard to the gaseous phase formed during a partial condensation; in line 11 the phrase recites "gaseous phase

containing essentially” and in line 14 referring to the same gaseous phase the phrase recites “gaseous phase containing”. It would appear that there is a different scope between the two recited transitional phrases. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,981,819 to Moeller et al. (hereinafter "Moeller").

Moeller discloses a process for producing C₃-olefins and C₄-olefins from a feed mixture containing C₄-olefins to C₇-olefins by conversion of the feed mixture on a granular zeolite catalyst at a temperature from 380° to 700° C (col. 1, lines 6-10). In reference to the sole figure, evaporated feed (1) is mixed with stream (2); the mixture is passed through a heater (4); the steam-containing feed mixture (5) having a temperature in the range of 380° to 700° C is introduced into a reactor (6) wherein a shape-selective, pentasil-type zeolite catalyst is provided in the form of a bed; the product mixture withdrawn (9) has a temperature which is 20° to 80° C lower than the inlet temperature in line 5; the product mixture (9) is then cooled in a cooler (10) to a temperature of about 30° to 60° C so that water and gasoline will condense out; the condensate-containing mixture (11) is supplied to a separator (12) and water is withdrawn via line 13, an organic phase is obtained via line 14, and a product gas is withdrawn via line 15; the organic phase (14) is sent to a distillation column (17) to separate out C₃-olefin and C₄-olefin fraction (18) and a gasoline fraction (19). See col. 2, lines 11-63. The reactor is operated at a pressure in the range of 0.2 to 3 bar (col. 1, lines 54-55).

The disclosure by Moeller of utilizing a single cooling step (condenser 10) to cool the reaction mixture to a temperature of about 30° to 60° C is equivalent to the

claimed two cooling steps, i.e., first cooling the reaction mixture to 100° to 200° C followed by a subsequent further cooling (i.e., quenching) to temperatures of 40° to <100° C.

It is noted that the organic phase (14) of Moeller is equivalent to the claimed gaseous phase containing essentially ethylene, propylene, C₄ to C₈ olefins and additional hydrocarbons. It is acknowledged that stream 15 of Moeller contains C₂ to C₄ olefins and that the organic phase (14) contains C₃₊ olefins. However, since no separation is 100% pure, it is expected that some ethylene would also be contained in the organic phase. Hence, the equivalence of organic phase (14) of Moeller to the claimed gaseous phase composition.

The differences between Moeller and the claimed invention is that Moeller does not disclose (1) compressing the organic phase prior to the separation step and (2) further separating the gasoline fraction into a fraction containing C₄ to C₆ olefins and a fraction containing C₇₊ olefins.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Moeller by adding the compression step or to maintain a pressure in the distillation column (17) in a range including as claimed for proper separation of different components.

With regard to the further separation of the gasoline fraction, it would have been obvious to one having ordinary skill in the art at the time the invention was made to

further separate the gasoline fraction depending upon desired products for utilization in downstream processing. It is known to those skilled in the art that the reference stream (19) comprising gasoline comprises C_{4+} olefins.

With regard to claims 2 and 4 directed to utilizing the recovered water stream from the quenching step and from the compression step, it would have been obvious to one having ordinary skill in the art to recycle the water recovered from various points of the process as steam for efficient processing since steam is required in the process. It is noted that Moeller does not disclose water recovered from any points other than from the separator (12). It is known to those skilled in the art that some water would be contained in the organic phase since there would not be 100% pure separation of water in the separator (12). Therefore, depending on desired purity of the products from distillation column (17), water would be removed from said distillation column (17) and be recycled in the form of a steam.

With regard to claim 3 directed to recycling the generated C_4 to C_6 olefins, it is within the level of one having ordinary skill in the art to recycle C_4 to C_6 olefins for complete processing and increased production of desired product(s), i.e., such as propylene.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to In Suk Bullock whose telephone number is 571-272-5954. The examiner can normally be reached on Monday - Friday 6:00-2:30.

Application/Control Number:
10/522,498
Art Unit: 1797

Page 7

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



I.B.